

## 03050202-050

(Stono River)

### General Description

Watershed 03050202-050 is located in Dorchester and Charleston Counties and consists primarily of the *Stono River* and its tributaries from Log Bridge Creek to Wappoo Creek. The watershed occupies 156,936 acres of the Lower Coastal Plain and Coastal Zone regions of South Carolina. The predominant soil types consist of an association of the Meggett-Brookman-Bladen-Chisolm series. The erodibility of the soil (K) averages 0.15; the slope of the terrain averages 1%, with a range of 0-6%. Land use/land cover in the watershed includes: 66.9% forested land, 8.9% scrub/shrub land, 6.8% forested wetland, 6.8% nonforested wetland, 5.8% urban land, 1.8% agricultural land, 2.9% water, and 0.1% barren land.

This segment of the Stono River, classified SFH, runs from Log Bridge Creek (near to its connection with the Edisto River Basin) to Wappoo Creek (which connects to the Ashley River), and drains into the lowest segment of the Stono River. Scotts Branch flows into Fishburne Creek which in turn flows into Horse Savanna and Rantowles Creek. Rantowles Creek accepts drainage from the Wallace River (Caw Caw Swamp, Drayton Swamp, Caddin Bridge Swamp) and then flows into the Stono River. Log Bridge Creek (Middle Branch, Mellichamp Branch) also flows into the Stono River and shares drainage with the Wallace River. Downstream from the SCL Railroad Bridge, the Stono River incorporates the drainage of Long Branch Creek, Sandy Bay, and Elliott Cut (Wappoo Creek). Wappoo Creek is classified SB. There are a total of 502.9 stream miles in this watershed and 8.6 square miles of estuarine areas.

### Water Quality

<u>Station #</u>	<u>Type</u>	<u>Class</u>	<u>Description</u>
MD-121	S	SFH	LOG BRIDGE CREEK AT SC 162
MD-202	P	SFH	STONO R. AT S-10-20 2 MI UPSTR OF CLEMSON EXP. STATION
MD-025	S	SFH	MOUTH OF ELLIOTT CUT AT EDGE WATER DR (S-10-26 OFF HW 17)
MD-020	P	SB	MOUTH OF WAPPOO CREEK BETW CHANNEL MARKERS 3 & 4

**Log Bridge Creek (MD-121)** - Aquatic life uses are fully supported; however there are significant increasing trends in pH and turbidity. This is a tidally influenced system, often characterized by naturally low pH and dissolved oxygen concentrations. Although pH and dissolved oxygen excursions occurred, they were typical of values seen in such systems and were considered natural, not standards violations. Recreational uses are not supported due to fecal coliform bacteria excursions.

**Stono River (MD-202)** - Aquatic life uses are partially supported due to dissolved oxygen excursions, compounded by significant decreasing trends in dissolved oxygen concentrations and significant increasing trends in total phosphorus concentrations and turbidity. There was also a significant

increasing trend in pH. Significant decreasing trends in five-day biochemical oxygen demand, total phosphorus concentrations, and total nitrogen concentrations suggest improving conditions for these parameters. In sediments, a very high concentration of zinc was measured in the 1997 sample, which exceeded the Effects Range Low (ERL) concentration, but was less than the Effects Range Median (ERM) concentration. Recreational uses are partially supported due to fecal coliform bacteria excursions.

***Elliott Cut (MD-025)*** - Water quality at this site is influenced by water entering from Charleston Harbor on the rising tide. Aquatic life uses are not supported due to dissolved oxygen excursions, compounded by a significant decreasing trend in dissolved oxygen concentrations. There was also a significant decreasing trend in pH. A significant decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. Recreational uses are partially supported due to fecal coliform bacteria excursions; however a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter.

***Wappoo Creek (MD-020)*** - Water quality at this site is influenced by water entering from Charleston Harbor on the rising tide. Aquatic life uses are fully supported; however there is a significant decreasing trend in dissolved oxygen concentrations and there was a high concentration of zinc measured in 1996. There is also a significant decreasing trend in pH. Significant decreasing trends in five-day biochemical oxygen demand and total nitrogen concentrations suggest improving conditions for these parameters. Recreational uses are fully supported; however there is a significant increasing trend in fecal coliform bacteria concentrations.

## **NPDES Program**

### ***Active NPDES Facilities***

<b><i>RECEIVING STREAM FACILITY NAME PERMITTED FLOW @ PIPE (MGD) COMMENT</i></b>	<b><i>NPDES# TYPE LIMITATION</i></b>
STONO RIVER SWYGERT SHIPYARD, INC. PIPE #: 001 FLOW: 0.0066	SC0037770 MINOR INDUSTRIAL EFFLUENT
STONO RIVER DITCH CHARLESTON CPW/SAVAGE RD PIPE #: 001 FLOW: 1.50	SC0026051 MAJOR DOMESTIC EFFLUENT
MIDDLE BRANCH D&A PARTNERSHIP/RAVENEL MINE PIPE #: 001 FLOW: M/R	SCG730126 MINOR INDUSTRIAL EFFLUENT
LOG BRIDGE CREEK GEIGER C & M OIL PIPE #: 001 FLOW: 0.115	PROPOSED MINOR INDUSTRIAL EFFLUENT

## Nonpoint Source Management Program

### Camping Facilities

*FACILITY NAME/TYPE*  
*RECEIVING STREAM*

*PERMIT #*  
*STATUS*

LAKE AIRE CAMPGROUND/FAMILY  
WALLACE RIVER

10-307-0019  
ACTIVE

### Mining Activities

*MINING COMPANY*  
*MINE NAME*

*PERMIT #*  
*MINERAL*

TRULUCK CONSTRUCTION CO., INC.  
PLANT SITE

0196-19  
SAND

FELDER TRUCK LINES  
PALMETTO PIT #3

0645-19  
SAND/CLAY

ADDCO MINING COMPANY  
EVERGREEN MINE

0252-35  
SAND/CLAY

ROYAL LAND, INC.  
ROYAL LAND #1 MINE

0695-19  
SAND/CLAY

RW MCDANIELS CONSTR. & MINING CO.  
MCDANIEL MINE

0894-19  
SAND/CLAY

ST. PAULS LAND COMPANY, INC.  
ST. PAULS LAND COMPANY, INC. #2

1024-19  
CLAY

MURRAY MINES, INC.  
BEECH HILL

1026-35  
SAND/CLAY

D&A, LLC  
RAVENEL MINE

1089-19  
SAND/CLAY

PALMETTO SAND CO., INC.  
FISHBURNE CREEK MINE

1092-35  
SAND

MURRAY MINES, INC.  
TREE HOUSE MINE

1110-35  
SAND

MAD-DOG MINING CORP.  
MAD-DOG #1

1120-19  
SAND/CLAY

### Land Disposal Activities

#### Landfill Facilities

***SOLID WASTE LANDFILL NAME  
FACILITY TYPE***

***PERMIT #  
STATUS***

BEES FERRY  
MUNICIPAL

101001-1201 (101001-1101,  
ACTIVE DWP-124, DWP-083)

TRIDENT LANDFILL  
MUNICIPAL

DWP-005  
CLOSED

## **Growth Potential**

The areas with a high potential for growth in the watershed include Stono Ferry in Hollywood; Rushland Plantation, Headquarters Plantation, and Fenwick Acres on Johns Island; and Bees Landing and Essex Farms in the City of Charleston. Water and sewer services are available to all these growth areas.

## **Watershed Protection and Restoration**

### ***Special Projects***

#### **Demonstration of Alternative to Individual Onsite Disposal Systems**

This project, undertaken by the SCDHEC Division of Onsite Wastewater Management, constructed an innovative wastewater treatment system especially designed for poorly drained soils, called an artificial wetlands wastewater treatment system or rock/plant filter onsite wastewater treatment system. Using Section 319 funds, the project has successfully demonstrated how this best management practice can be used for onsite wastewater disposal. A Hollywood, S.C. home site was selected for the project due to severe septic system failures and the homeowners' willingness to try an innovative solution. The home is located in a subdivision in southwestern Charleston County. A performance evaluation of South Carolina septic tank systems in 1987 identified homes in the development as having significant septic system problems. This is due, in particular, to the poorly drained soil with a shallow seasonal high water table.

The system is modeled on one developed by Dr. B.C. Wolverton, who designed a simple backyard system that purifies septic tank discharges. The rock/plant system consists of stones buried in a shallow ditch and plants rooted in the stones. Partially treated sewage from the septic tank flows through the stone filter, providing moisture and nutrients to the plants. Together, the plants and stone filter cleanse the septic tank discharge while adding beauty to the lawn. The only upkeep is harvesting some plants once or twice a year.

Water samples collected at both ends of the rock/plant filter demonstration project were analyzed for nitrate nitrogen, five-day biochemical oxygen demand (BOD5), total suspended solids (TSS), and fecal coliform bacteria. Preliminary results showed that the filter effectively removed bacteria and BOD5. Based on six samples collected between March and July 1992, the system removed 95 percent of the fecal coliform bacteria from the incoming wastewater. During the study, the bacteria level at the inlet measured 230,000 per 100 milliliters; on the same day, the bacteria level at the outlet was 80 bacteria per 100 milliliters—a treatment efficiency of 99.97 percent.

A second artificial wetland on a similar problem soil was constructed in Horry County and appears to be functioning properly. The success of those two systems has led state sanitation officials to consider artificial wetlands as appropriate solutions for emergency repair of malfunctioning septic tank systems.